BAILEYA

A Quarterly Journal of Horticultural Taxonomy

Vol. 4 No. 2

JUNE 1956

Vining Aroids in Cultivation - Supplementary Notes 53

Notes on Cultivated Scrophulariaceæ 2. Antirrhinum and Asarina 55

Additional Note on the Easter Lily 69

J. F. Rock's Expedition to Northwest China (1924-27) 71

Technical Names for the Cultivated Capsicum Peppers 81

Amaryllis Evansiæ sp. nov. 85

Kalmia, the American Laurels 89

Book Review 95

Published at the Bailey Hortorium of the New York State College of Agriculture, a Unit of the State University of New York, at Cornell University, Ithaca, New York

BAILEYA. - A quarterly journal devoted to the botany of cultivated plants and especially to their identification, nomenclature, classification, and history in cultivation. Editor: William J. Dress.

Price: $2.00 per year, net, postpaid, in funds payable at par in United States currency in New York. Address subscriptions and requests for back numbers to The Bailey Hortorium, Cornell University, Ithaca, New York. Make all remittances payable to BAILEYA.

Notes and short scientific papers relating to the systematics of cultivated plants, and to their history in cultivation or to the literature pertaining to such topics, will be considered for publication to the extent that the limited space of the publication permits. Line illustrations to accompany such papers are invited. Authors of more than two pages of print will receive in recompense 15 copies of the issue in which their contribution appears. No proof will be submitted to the author and copy is considered in final form as received. Extracted reprints without change in pagination will be provided at cost [approximately $1.75 per page per 100 copies].

BAILEYA
Vol. 4 June 1956 No. 2

(Mailed at Ithaca, N. Y., June 29, 1956)

Vining Aroids in Cultivation - Supplementary Notes

George S. Bunting
New York Botanical Garden

The five genera of vining aroids most commonly seen in cultivation were discussed in this journal previously ("Baileya" 3: 183-187 [1955]), and a key for identification of these genera based on vegetative characters was presented. The American genera Anthurium, Philodendron, Monstera, and Syngonium are easily separated from one another by their leaves alone, but the Asian genus Scindapsus is very difficult, if not impossible, to separate positively in a vegetative key from Monstera, to which it is very closely related. This is true mainly because Scindapsus is seen most commonly in its juvenile phase of growth - a variable form without many characteristic features.

These latter two genera belong to a subfamily of the Araceæ which is characterized by the presence of trichosclereids in the tissue, and this is a good character for positive identification of these genera. However, Scindapsus was incorrectly keyed out in the aforementioned article under "leaf-blade and petiole without transparent needle-shaped structures in the tissue" (referring to trichosclereids). In fresh material of S. aureus or S. pictus (juvenile stage) no such structures could be detected, but upon later observation of the same material after it was dried, the trichosclereids were readily demonstrated by pulling apart the tissue of the leaf. Scindapsus cannot, therefore, be separated from Monstera according to the key presented therein.

Cenerally, the size of the leaves of Monstera species (in cultivation) is much greater than in Scindapsus (juvenile stage). Scindapsus pictus and its variety as commonly seen may be identified by the silver blotches on the very one-sided, simple, cordate leaf-blade, and the reticulate form of the secondary lateral veins of the blade differ markedly from the more or less parallel laterals of any Philodendron species with which it might be confused. Scindapsus aureus (Pothos aureus of the trade) and its variety have the same oblique leaf-blade, but the texture of the leaf is much less leathery than in the former, and variegation is very irregular, zonate or sectoral and mottled, either yellow or white, while in S. pictus the silver blotches are more or less evenly distributed,

though not really arranged in any pattern. Some persons will, of course, ask how to separate these Scindapsus forms from the variegated monsteras that are seen occasionally. The answer logically must lie in the floral differences, but since flowers are rare on cultivated material (at least that in pots), the only recourse is to check a photograph or authentic specimen, or ask an expert.

It was also stated in the previous article that Scindapsus is characterized by the presence of a geniculum at the junction of the leaf-blade and petiole, which is indeed true in mature plants. However, subsequent observation of the plants in the conservatory of the New York Botanical Garden proved that some plants - very poor, juvenile specimens though they be - do not exhibit a geniculum, but rather have the petiole winged right up to the juncture with the leaf-blade. Other plants that were much better grown have a geniculum more or less identical with that illustrated in fig. 61 ("Baileya" 3: 187 [1955]).

It has been pointed out to me that Philodendron Andræanum, that most handsome of philodendrons for conservatories, has an enlargement at the junction of the leaf-blade and petiole, contrary to my statement that leaves of philodendrons are not geniculate. Yet there are leaves on the same plant that do not exhibit this structure. Even where present, the resemblance to true genicula of the Anthurium-type is not convincing, though surely in this species the structure appears to serve the same function of allowing reorientation of the leaf-blade independent of the petiole position. Of course, this species is not important commercially, though it is a favorite subject for growth in conservatories; yet one rarely sees a good typical specimen of it. Despite the geniculum-like enlargement of some leaves of this species of Philodendron, it can easily be separated from the other genera by observing that all lateral veins of the leaf-blade are more or less parallel to one another, rather than reticulate between the primaries, and they flow out nearly to the margin, there becoming indistinct (upon casual observation) or in any case are not connected by a prominent marginal vein typical of syngoniums and many anthuriums.

Notes on Cultivated Scrophulariaceæ
2. Antirrhinum and Asarina

Gordon P. DeWolf, Jr.

One of the commonest and most widely grown floricultural plants in the United States today is the common snapdragon, Antirrhinum majus Linnæus. This single species, in a multiplicity of forms, is grown as a commercial cut-flower crop under glass and as a bedding or cutting annual in the amateur's back yard. As with so many other genera in which a single species has assumed a dominant economic role, we tend to overlook the interest and variety which related taxa may have. This is true of the snapdragons and many of their close allies. Also, as is true of many other genera of cultivated plants, recent studies have indicated as necessary certain changes of names which need to be discussed.

In 1753, in the first edition of the "Species Plantarum," Linnæus had a genus which he called Antirrhinum. This was made up of three pre-Linnæan genera, Linaria, Antirrhinum, and Elatine. That this was not a satisfactory treatment of the various taxa involved is indicated by the relative rapidity with which post-Linnæan students split up the original genus into a greater or lesser number of genera. More than a dozen such segregates have been proposed, and many of these have one or more species of horticultural importance. This and a subsequent article will be devoted to the taxonomy and nomenclature of some of the more important of these.

Linnæus, writing in 1753, listed 28 species which he included in his composite genus Antirrhinum. In the first comprehensive monograph of the group, written by Edouard Chavannes and published in 1833, six genera and 107 species were recognized. By 1876, when Bentham published his treatment of the group for the "Genera Plantarum," the number of recognized species in the group had risen to 178, included in eight genera. Wettstein, publishing in Engler and Prantl's "Die Natürlichen Pflanzenfamilien" in 1895, revised the taxa and in a comparable group found fourteen genera and about 232 species. A modern treatment of the group (that of Werner Rothmaler, published in Fedde's Repertorium, vol. 52, 1943) lists 21 genera and about 240 species.

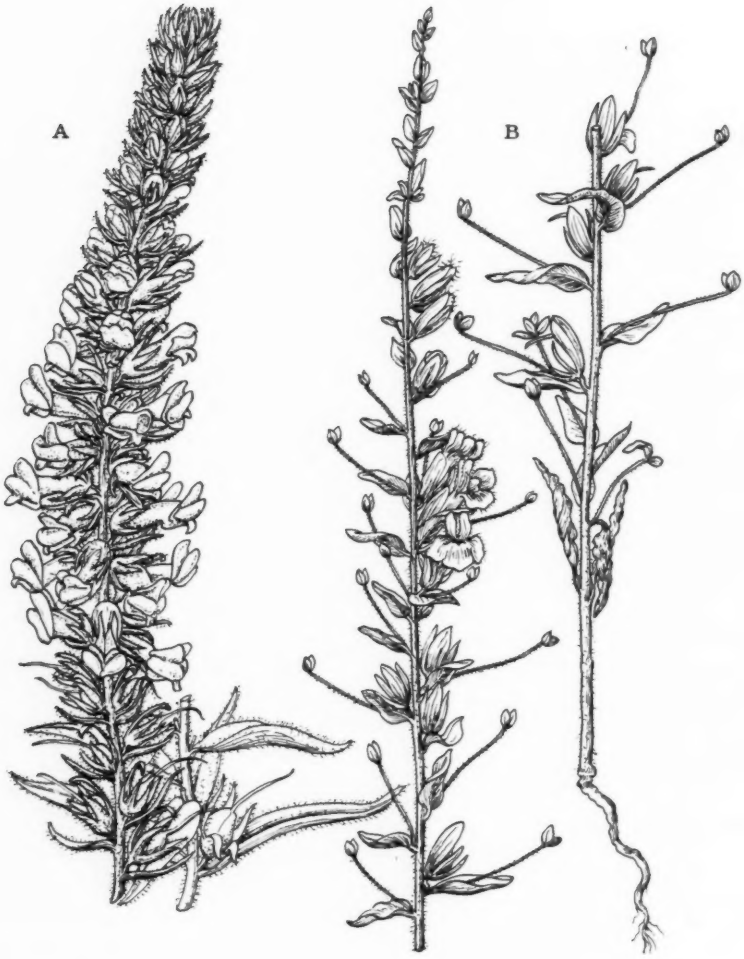

Fig. 20. A, Antirrhinum multiflorum (A. glandulosum). Adapted from Edward's Botanical Register 22, plate 1893 (1836). B, Antirrhinum Coulterianum. Adapted from U. S. Pacific R. R. Exp. and Surveys: Botanical Report V, plate 11 (1855).

In general, most students subsequent to Linnæus have distinguished in this alliance two large genera, Linaria and Antirrhinum, with a number of smaller genera associated more or less closely with one or the other of them. In the present paper I wish to discuss the cultivated members of the genus Antirrhinum as well as species segregated from it into the genus Asarina.

Antirrhinum, as generally interpreted, is a genus of about 40 species, native primarily in southern Europe and in the southwestern United States. Most of the species which are in cultivation are perennials, but their tender nature and rapid growth dictate their use as annuals in a large part of this country. On the generic level, Antirrhinum is characterized by the asymmetrical capsular fruit and by the saccate, but never spurred, corolla. The only genus with which it is likely to be confused is Linaria, but this is distinguished by its symmetrical capsule and generally by the presence of a spur at the base of the corolla. The related genus Asarina has a twining stem, a symmetrical capsule, and a saccate corolla, while Cymbalaria differs from this last by its spurred corolla.

Of the 40 or so species of Antirrhinum known, less than ten are in cultivation, and of these only one, A. majus, is commonly grown. This seems unfortunate, since several of the other species, particularly the European ones, are rather attractive and would doubtless be useful in the rock garden in areas where they are hardy.

Antirrhinum majus, the common, large, or florists' snapdragon, is an erect perennial which comes so quickly and easily from seed that it is usually treated as an annual. With care, however, it will retain its perennial character as far north as Massachusetts. This species has been the subject of intense breeding and selection, and strains are available ranging from dwarfs to giants in stature, and from white to deep, intense red in color. In general, the lower-growing forms are sturdier and more suitable for the outdoor garden, the larger forms requiring protection from wind and rain to attain their fullest development. While they may be grown in the annual border, plants intended to supply material for cut-flower decoration indoors are best grown separately so that removal of flowering stalks will not be detrimental to the appearance of the outdoor display. Various Latin-named forms are available, but these all seem to be convarieties[1] and of no significance botanically.

Three American species are sometimes cultivated, all of which are native in California. Antirrhinum Coulterianum, the chaparral or white snapdragon, is a species native in southern California. This was originally described by Bentham in 1846, based on materi-

[1] Convariety: a group of cultivars within a variable species or interspecific hybrid possessing common features of importance to cultivation.

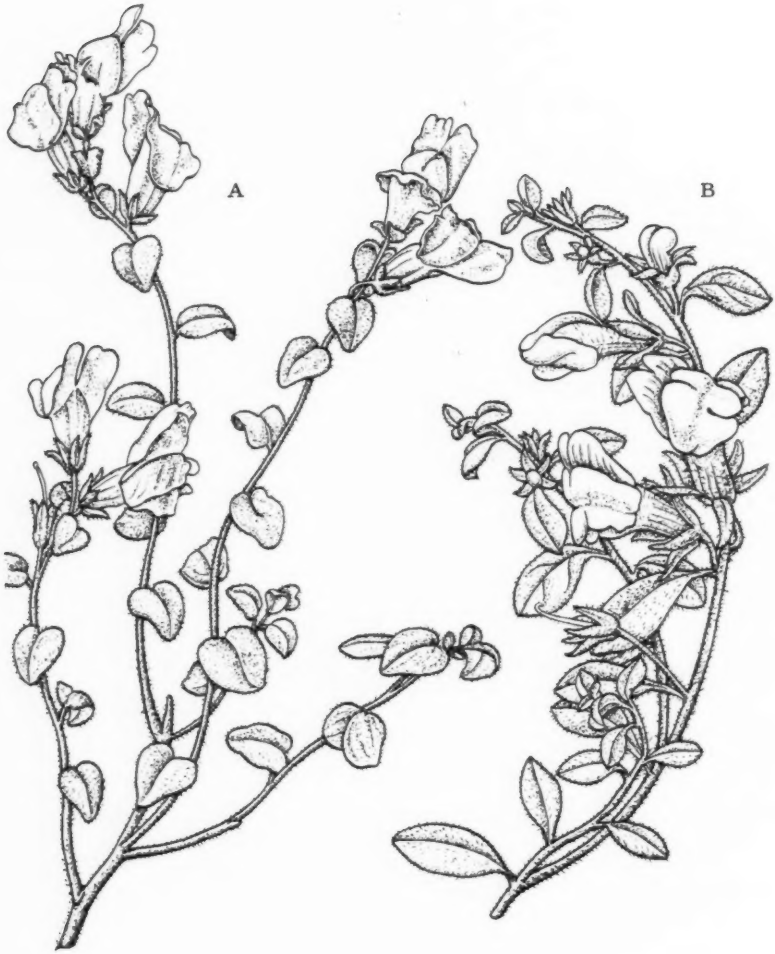

Fig. 21. A, Antirrhinum molle. Adapted from Gartenflora 2, plate 49 (1853). B, Antirrhinum glutinosum. Adapted from Curtis's Botanical Magazine 49, plate 7285 (1893).

al sent to W. J. Hooker at Kew, received in 1844 or 1845 from the herbarium of Trinity College, Dublin. The material had been collected originally by Dr. Thomas Coulter, an Irish physician and naturalist, student of the elder De Candolle, and curator of the Trinity College herbarium from about 1835 to 1843. He had gathered the material during a three years' residence in California (1831-34). This is an erect or somewhat scrambling annual, growing to about a meter tall, with short, wiry, tendril-like lateral branches. The corolla is 10 - 12 mm. long, and white.

Antirrhinum multiflorum Pennell is a new, and correct, name for the California plant that has long been known as A. glandulosum Lindley. This latter name cannot be used since it is a homonym of a synonym of Linaria vulgaris. John Lindley, then assistant secretary of the Horticultural Society and Professor of Botany in University College, London, based his description on material grown in the gardens of the Society in 1834, from seed sent back by David Douglas. This also is an erect annual, to about 15 dm. tall, and heavily sticky-pubescent, with numerous short but not tendril-like lateral branches. The flowers are light purple, to 20 mm. long.

Finally, there is Antirrhinum ovatum, which is distinguished by having lavenderish flowers up to 2.5 cm. long. It is one of the largest-flowered of the native species, but its discoverer, Miss Alice Eastwood, commented that it was "an unattractive looking plant."

Of the European species, Antirrhinum Orontium, an erect annual, widespread in Europe and Asia, is rather commonly cultivated and has sometimes escaped in this country. This grows about 3 dm. tall, with very narrow leaves and the purplish flowers (to 12 mm. long) borne singly in the axils of the leaves. It hardly seems worth cultivating.

Antirrhinum glutinosum and A. molle, on the other hand, are both tender perennials that are rather interesting. They are both heavily pubescent, prostrate or decumbent woody-based herbs. The most obvious difference between the two is that A. glutinosum, as the name would imply, is heavily glandular and consequently sticky, while A. molle has no glands. In A. glutinosum the flowers are yellowish white, striped red, while in A. molle they are white with red stripes. Probably neither is amenable to the cold, wet winters of the northeastern part of our country, but should make desirable garden subjects where warmer, drier conditions prevail.

In "Hortus Second" the generic name Maurandya was used for a group of twining species related to Antirrhinum. The name Asarina did not appear. In "Hortus III" the species formerly included in Maurandya will be found in Asarina, together with other species which were formerly included in Antirrhinum. These changes reflect the conclusions of a recent study by the late Francis W. Pennell of the Academy of Natural Sciences of Philadelphia.

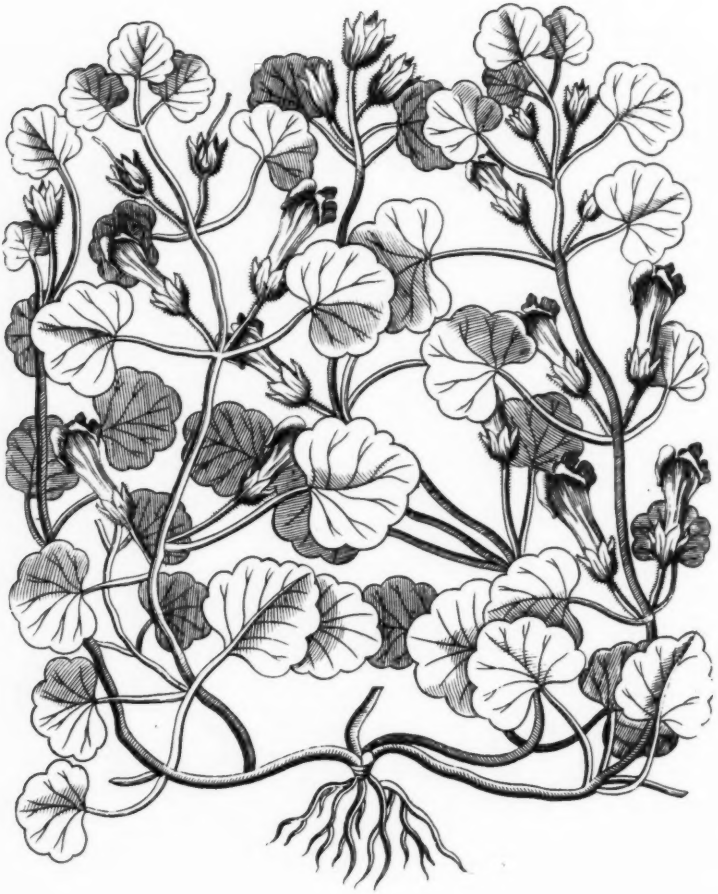

Fig. 22. Asarina procumbens. From Quer, Flora Española 3, plate 30, "Asarina Lobelii" (1762).

Pennell showed that these species, formerly separated in two genera, are united by their climbing habit and symmetrical (not oblique) capsules. These two characters separate them from Antirrhinum. Characters such as these are considered to be more reliable for distinguishing generic lines in this group than are characters taken from the structure of the corolla. The diversity in structure of the lobes of the corolla, from almost snapdragon-like in Asarina antirrhiniflora to almost trumpet-like in A. erubescens is striking, but of only specific importance. Since Asarina is the earliest name available for the group, the later name Maurandya has to be abandoned when the taxa are united.

The single European species of the genus Asarina appears to have been first described by Matthias Lobelius, in his "Plantarum seu Stirpium Historia" of 1576, as Asarina, sive saxatilis hederula. The taxon was treated by several other authors, usually with some variant of this name, but in 1753 Linnæus gave it the name Antirrhinum Asarina. This, despite certain significant (though overlooked) discordant treatments, has been the most commonly used name down to the present.

As early as 1762, in the third volume of his monumental "Flora Espanola," Joseph Quer returned the plant (a native of Spain) to the genus Asarina, taking up the pre-Linnæan binomial Asarina Lobellii (in commemoration of Lobelius, who had first described it). Unfortunately, Quer did not consistently use binomial nomenclature in his flora. This defect makes it impossible for us to accept his specific epithets (International Code of Botanical Nomenclature, Art. 79) though it does not prevent us from taking up his generic names. Willkomm and Lange, in their "Prodromus Floræ Hispanicæ" of 1870, took up Quer's binomial, but their legitimization of the epithet Lobelii[1] was too late to give it validity, for Philip Miller, in the eighth edition of his "Gardener's Dictionary" of 1768, had in the meantime published the name Asarina procumbens for this same species. Since Linnæus' name, Antirrhinum Asarina, has to be discounted because a transfer of the epithet Asarina to the genus Asarina would create the tautonym Asarina Asarina (illegitimate under the provisions of the Code, Art. 79), Miller's epithet procumbens is the earliest available legitimate name and, under the rule of priority, must stand.

Asarina procumbens Miller is the only European member of an essentially Mexican genus. It is a procumbent, sticky-pubescent perennial native in the mountains of the Iberian Peninsula. The whitish or pinkish flowers, which may reach 3 cm. in length, are borne singly on long pedicels in the axils of the leaves. This spe-

[1]The epithet was spelled "Lobellii" by Quer, but "Lobelii" by Willkomm and Lange. Since Quer's specific name is considered illegitimate, the spelling "Lobelii" is correct when this name is used.

Fig. 23. A, Asarina scandens. Adapted from Cavanilles, Icones et Descriptiones Plantarum 2, plate 116 (1793). B, Asarina antirrhiniflora. Adapted from Curtis's Botanical Magazine 40, plate 1643 (1814).

cies makes its best display in the rock garden or on a dry wall where the prostrate stems can sprawl or hang over the stones. While it is probably hardy as far north as Philadelphia if it can be protected from excessive dampness over the winter, it comes so readily from seed that it can easily be treated as an annual.

Five of the six remaining species are Mexican, though one of these does get into Texas and California. The sixth, Asarina filipes, is widely distributed on the West Coast and in the Southwest. All of the species are essentially herbaceous perennials with climbing or twining annual stems. Being plants of dry areas, the various species may be presumed to be intolerant of cold, moist weather, and consequently not hardy northward. They are reputed to come so readily from seed, however, as to be useful as annuals. They are also useful in the cool greenhouse during the winter months, where they may be grown in pots or hanging baskets.

The first of the American species to become known to European botanists was the taxon now known as Asarina scandens (Cavanilles) Pennell. This was described and figured by A. J. Cavanilles, professor of botany in Madrid, in the second volume of his "Icones et descriptiones plantarum, quae aut sponte in Hispanica crescent, aut in hortis hospitantur" (Pictures and descriptions of plants which either grow naturally in Spain or find hospitality in the gardens there) which was published in 1793. Cavanilles set up a new genus for the taxon and named it Usteria scandens, the generic name commemorating Paul Usteri, doctor (M.D.) and instructor in the Medical - Chirurgical Institute in Zurich, and editor of "Annales der Botanik" from 1791 - 96. However, the generic name Usteria had been used previously by K. L. Willdenow for a genus in the Loganiaceæ and was therefore a later homonym of Willdenow's Usteria. As such, it was illegitimate when published. Cavanilles' specific epithet, however, is legitimate, and must be used in any new combination with another generic name.

Confusion was compounded when, in 1797, Casimiro Gomez Ortega, Director of the Botanic Garden in Madrid, published the genus Maurandya and the species M. semperflorens, in the 21st "Decade" of his "Novarum aut rariorum plantarum horti Matritensis descriptionum decades cum nonnullarum iconibus" (Decades of descriptions of new or rare plants in the Madrid Botanic Garden with illustrations of some). This genus was dedicated to "Catherina Pancratia Maurandy, an excellent woman, wife of Augustinus Juan, Professor of the Royal Botanic Garden of Cartago, and companion of his botanical labors." I have not seen this publication, but, according to Pennell, the description of M. semperflorens is "practically a redescription of Usteria scandens Cav." The Maurandya name had been used quite consistently for the American species down to 1947, when Pennell finally set the record straight, and transferred them to Asarina.

Turning our attention again to Asarina scandens, we note that Cavanilles found it in 1793 growing in the garden of Archbishop Valentini in Puzol, near Valencia, and in the Royal Garden in Madrid. According to William Curtis, who published a picture of the plant in 1799, the seeds were sent by Dr. Martin Sesse, Director of the Botanic Garden in Mexico (D.F.) to the Royal Botanic Garden in Madrid. From here it was introduced into England by the Marchioness of Bute about 1786, but it did not flower in England until 1797.

Asarina scandens is a glabrous shrubby climber, native in southern Mexico. The slender stems, supported by twining petioles and pedicels, may reach three meters or more in length. The corollas, which are funnel-form and range in length from 3.5 to 4.5 cm., have a whitish tube and purplish spreading lobes.

The second American species to be known in Europe was Asarina antirrhiniflora. This species, which is native in northern Mexico and the adjacent United States, was brought to Europe by Humboldt and Bonpland in 1804. It was figured in 1807 (fide Pennell) in K. L. Willdenow s "Hortus Berolinensis." It reached England, by way of Paris, and was figured in "Curtis's Botanical Magazine" in 1814. This species is much like the last in habit, but the snapdragon-like corollas are only 2.5 - 3.0 cm. long with a whitish tube and purplish lips.

Asarina Barclaiana was described in 1827 by John Lindley as a species of Maurandya. It is very similar to A. scandens, differing principally in the glandular-pilose calyx (A. scandens has the calyx glabrous) and in the darker purple of the lips of the corolla. It was first grown in the garden of Robert Barclay, Esq., who had received the seeds from Mexico. This Robert Barclay was a retired London merchant with a taste for horticulture and farming. He maintained a large garden with extensive glasshouses, and a large natural history library. He had contacts in tropical America and Mauritius who supplied him with seeds and plants of attractive, curious, or unusual species. Many of the plants first (or best) grown in his garden served as the basis for colored illustrations in the semi-popular, botanico-horticultural periodicals of the time.

David Don provided the next complication. He was the son of the Superintendent of the Edinburgh Botanical Garden. In 1819 (at the age of 19) he went to London and worked for a time in the Apothecaries' Garden in Chelsea. About 1820, however, he was employed by A. B. Lambert as Keeper of his herbarium and library. Two years later he was appointed Librarian to the Linnæan Society, though he seems to have retained his close connection with Lambert. In this way he had access to two of the outstanding libraries and herbaria of the period.

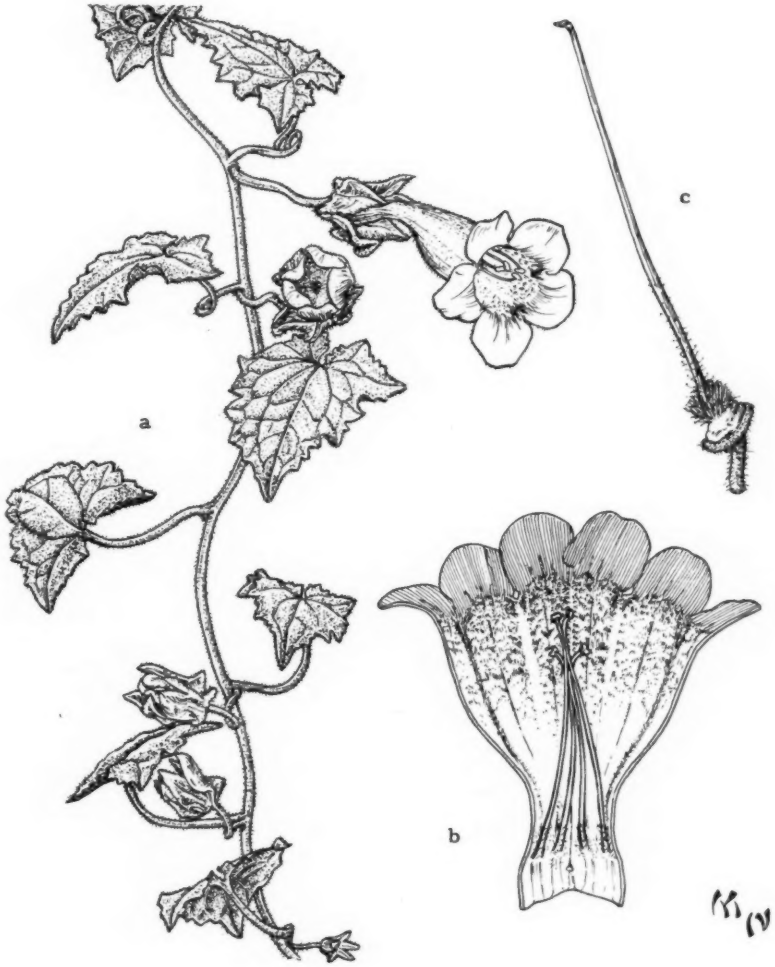

Fig. 24. Asarina erubescens: a, habit x 4/5; b, corolla expanded x 4/5; c, pistil x 1 1/5.

Aylmer Bourke Lambert had abundant means and a strong interest in botany. He brought together an extensive herbarium, particularly strong, it would seem, in tropical American plants. Among these collections were specimens taken by the Spanish botanists Sesse and Mochino in Mexico - probably between 1790 and 1800. Among these Mexican plants Don found two which he believed belonged to a genus hitherto unrecognized by botanical science. He named this genus Lophospermum and distinguished it from Maurandya on two points - the almost regular, tubular corolla and the conspicuous membranous wing on the seeds. It is the latter character which gave the genus its name (lophos - a crest, and sperma - a seed).

Of the two original species only one, Don's Lophospermum scandens, is still retained in the group under discussion. This name has been a source of considerable confusion. So long as the genus Lophospermum is retained as distinct there is no trouble, but when, as has generally been done, Lophospermum is reduced to synonymy with Maurandya, there are immediately two species with the name M. scandens.

As noted above, the legitimate name of the original species of Maurandya is M. scandens. Unfortunately, some people have continued to use Ortega's name M. semperflorens for this plant. If we now add a second species called M. scandens (based on Don's plant), the situation becomes extremely confused. This is exactly what happened. For fifty years or more two distinct species were confused as Maurandya scandens - and one of them doubled as M. semperflorens. Dr. L. H. Bailey, in 1916, in the "Standard Cyclopedia of Horticulture," finally straightened out the species and renamed Don's plant Maurandya Lophospermum. Since Maurandya may now be considered a synonym of Asarina, the correct name of Don's plant is Asarina Lophospermum.

Asarina Lophospermum is a robust vine, climbing, as in the other species, by means of its twining petioles. The corolla is 4 to 7 cm. long and rosy-purple. Asarina erubescens is similar but differs in being densely pubescent (not weakly pubescent or glabrous), and in having the corolla tube ventricose and pubescent on the exterior, not straight and glabrous. This has recently been cultivated as "creeping gloxinia."

Finally, we come to Asarina filipes (formerly Antirrhinum filipes), which ranges from Arizona and Utah to the West Coast. This is a slender twiner, both stems and pedicels being almost thread-like. The snapdragon-like corollas are 10 - 12 mm. long, yellow with the throat black-dotted. With this we seem to exhaust the list of species available in the trade. There have been others offered in the past, but they do not now seem to be available.

Keys to the Genera and Species[1]

1. Plants climbing by means of twining stems and petioles; capsule symmetrical, globose or cylindrical, glabrous, the cells opening by rupturing nearly or completely their entire length. . . . . Asarina

1. Plants not climbing; capsule asymmetrical, pubescent, the anterior cell enlarged, the cells opening by narrow apical pores. . . . . Antirrhinum

Asarina

1. Flowers yellow. . . . . A. filipes

1. Flowers pink or purple.

  2. Leaves reniform. . . . . A. procumbens

  2. Leaves deltoid or hastate.

    3. Flowers with a distinct yellow palate on the lower lip.. A. antirrhiniflora

    3. Flowers without a distinct palate.

      4. Seeds not winged; leaf-margins entire except for the main lobes.

        5. Sepals glabrous, corolla lavender. . . . . .A. scandens

        5. Sepals conspicuously glandular-pilose, corolla deep purple. . . . . .A. Barclaiana

      4. Seeds winged; leaf-margins dentate.

        6. Plant densely soft-pubescent, grayish; flowers rosy pink. . . . . .A. erubescens

        6. Plant glabrate or weakly pubescent, green; flowers rose-purple. . . . . A. Lophospermum

Antirrhinum

1. Plants erect.

  2. Flowers large, corolla 3-5 cm. long. . . . . A. majus

  2. Flowers smaller, corolla not over 2 cm. long.

    3. Corolla whitish. . . . . A. Coulterianum

    3. Corolla purplish.

      4. Plant heavily sticky-pubescent.

        5. Leaves more than twice as long as wide. . . . . .A. multiflorum

        5. Leaves less than twice as long as wide. . . . . A. ovatum

      4. Plant essentially glabrous. . . . . A. Orontium

1. Plants procumbent or decumbent.

  6. Plant sticky-pubescent. . . . . A. glutinosum

  6. Plant pubescent. . . . . A. molle

[1] Adapted from those of Pennell (Acad. Nat. Sci. Phila. Mono. no. 1, Scroph. East. Temp. No. Amer. pp. 298-99, 1935) and Munz (Proc. Calif. Acad. Sci. IV, vol. 15, no. 12, 1926).

Below is a finding list of species-names in Antirrhinum, Asarina, and Maurandya. The names which are underlined are valid names; the others are not.

Antirrhinum

Asarina :: Asarina procumbens
Coulterianum Bentham
filipes :: Asarina filipes
glandulosum :: Antirrhinum multiflorum
glutinosum Boissier and Reuter
majus Linnæus
maximum: a giant race of A. majus with very large flowers
molle Linnæus
multiflorum Pennell
Orontium Linnæus
ovatum Eastwood
pumilum Poiret ex Steudel: Botanically this is a synonym of Linaria flava, but some of the material so listed in the trade may be a dwarf form of A. majus.
speciosum: Galvesia speciosa

Asarina

antirrhiniflora (Humboldt and Bonpland) Pennell
Barclaiana (Lindley) Pennell
erubescens (Don) Pennell
filipes (Gray) Pennell
Lophospermum (Bailey) Pennell
procumbens Miller
scandens (Cavanilles) Pennell

Maurandya

Asarina :: Asarina procumbens
Barclaiana :: Asarina Barclaiana
erubescens :: Asarina erubescens
filipes :: Asarina filipes
Lophospermum :: Asarina Lophospermum
scandens :: Asarina scandens

Additional Note on the Easter Lily

Mary L. Holmes

Since "The Origin and History of the Easter Lily" was published in the last issue of "Baileya," Mr. William K. Harris, Jr., has supplied the facts and exact dates surrounding his father's introduction of the Easter Lily into the trade:

"Mrs. Sargeant, a Philadelphia resident and amateur gardener, visited Bermuda for pleasure and brought back a few of the lily bulbs growing there. She gave them to a small florist who operated two or three greenhouses in our neighborhood in 1876. My father saw the lilies when the bulbs flowered in the late winter of 1877 and recognized them as being different and superior to any of the lilies then in commerce. His offer to buy them was accepted and they were brought to his greenhouses the same day.

"A few lilies growing in pots were sold to a few retail florists in Philadelphia for the first time in 1881. My father issued a circular describing the merits of the lily and circulated it by mail to all the florists, nurserymen, and seedsmen that he could reach in 1882 and again in 1883. He found customers for small orders as far away as Australia.

"My father's greenhouses were at 55th Street and Darby Road, now called Woodland Ave., in Philadelphia. He was active as a florist from 1867 until his death on December 13, 1909. He was born March 18, 1838. He was never in Bermuda. He named the lily Lilium Harrisii himself.

"I am nearly ninety years old and I do not know of anyone now living who has any knowledge of the Harrisii Lily introduction except myself."

Mr. Harris, Jr., now lives at 4203 Pine Street, Philadelphia 4, Pennsylvania.

These facts verify the assumption in the previously published article that Emile Carrière's account of the introduction, in "Revue Horticole," 1883, is correct and that Anderson's, in "The Coming of the Flowers," undated, is unacceptable.

Fig. 25. Dr. Joseph F. Rock.

J. F. Rock's Expedition to Northwest China (1924-27)

Hubert L. J. Rhodes[2]

Dr. Joseph Rock is an almost legendary figure among the plant hunters of the twentieth century, being especially well known to horticulturists for his introductions from southwest China and adjacent Tibet. However, the part that this intrepid traveller and explorer has played in the introduction of extremely hardy plants from north-central Asia is apparently not generally appreciated.

In 1953, while I was making a survey of cultivated trees and shrubs on the Canadian prairies, I came across extensive plantings from Rock's seed. After Rock's 1924-27 expedition to northwest China and adjacent Tibet the Arnold Arboretum had distributed seed to the Experimental Station at Morden, Manitoba, to the Forest Nursery Station at Indian Head, Saskatchewan, and to F. L. Skinner, nurseryman, at Dropmore, Manitoba. In the hands of W. R. Leslie, J. Walker, and Skinner the seed had been carefully sown and the resulting plants were appraised for hardiness under prairie conditions. I collected many herbarium specimens from these plants during the survey, and on returning to Ottawa I made a search for literature concerning Rock and his travels in Asia. Following is a summary of information that I uncovered regarding Rock's 1924-27 expedition and its background, together with comments on some of the introductions that resulted from it.

Beyond the densely populated sections of China lie to the northwest the broad plateaus and twisting mountain chains of Kansu and the Tsinghai. In this area the natural flora is much less rich in species than it is in the more southerly portion of the great Asian land mass. The elevation is generally from eight to twelve thousand feet above sea level, and the climate is mostly dry and cold. Only in southern Kansu in the country of the Tebbus are the mountains sufficiently moist to support a forest flora similar to that of the mountains of Szechuan, the province to the south. Through the

[1] Contribution No. 1543. Botany and Plant Pathology Division, Science Service, Canada Department of Agriculture, Ottawa, Ontario.

[2] Assistant Botanist.

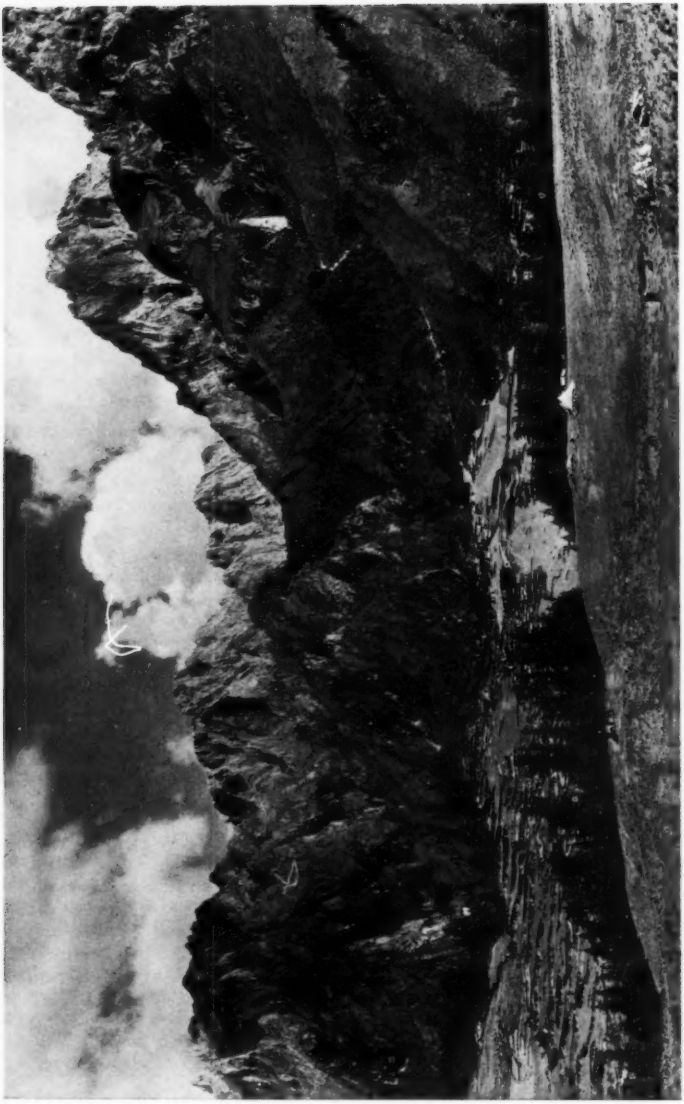

Fig. 26. The limestone amphitheater Drag-gam-na, looking northwest from an elevation of 9650 ft. (2970 m.). The lamasery Lha-sam Gom-pa on top of spur; below it, the The-wu village of Tong-wa. In foreground, Dr. Rock's camp. Trees are Abies sutchuenensis Rehd. & Wils., Picea Wilsonii Mast., P. asperata Mast., P. purpurea Mast.

centuries the chief centers of human habitation have been the lamaseries of the Buddhists. These lamaseries have functioned as strongholds against robber bands and hostile religious groups and as trading centers for the Tibetan nomads. In this region civilization, at least until very recently, has possessed essentially the same characteristics as monastic Europe of a thousand years ago. Except for the country along the ancient trade route between Peking and Tibet through southern Kansu, the area had remained practically unknown to outsiders until the late 19th century.

The botanical exploration of northwest China and adjacent Tibet began with the expeditions of Przewalski, Potanin, and other Russian explorers. The herbarium specimens collected by these men were studied by the famous Russian botanist Maximowicz, and apparently some of the species collected found their way into cultivation at St. Petersburg. However, until the English collectors Farrer and Purdom searched part of the area in 1914-15, the chief aim of collectors had been to obtain herbarium specimens rather than plants for gardens. Farrer was mainly interested in obtaining hardy rock garden plants, and he paid little attention to the woody plants that he saw.

In the summer of 1924 J. F. Rock happened to be the guest of Professor Sargent, the director of the Arnold Arboretum. Rock, a former professor of botany and Chinese at the University of Hawaii, had spent the previous three years in the southerly Chinese province of Yunnan, exploring and collecting for the U. S. Department of Agriculture as agricultural explorer in co-operation with the National Geographic Society. Sargent was interested in sending someone to obtain seed of woody plants from two little-known mountain ranges north and west of the upper Yellow River. Rock showed enthusiasm for such a venture, and Sargent decided to arrange an expedition under the sponsorship of Harvard University. Apart from his collecting for the Arnold Arboretum, Rock was to secure ornithological specimens for the Harvard Museum of Comparative Zoology.

In the course of his work in Yunnan, Rock had trained a number of Chinese of the Nakhi tribe as botanical collectors. These men, along with his previous cook from the same tribe, he reengaged for the northern trip, and late in 1924 the party set forth from Kunming under the protection of a military escort on the dangerous overland march to Kansu. During the first part of the trip the party was repeatedly threatened with attack by brigands. A letter from Rock to the National Geographic Society ("National Ceographic Magazine" 48: 331-347 [1925]) describes in some detail the hazards that the journey entailed. At one time his party and the escort numbered approximately 500 persons; with each prefecture that he passed through, the escort would be changed and the number of

Fig. 27. The expedition's camp on the Kokonor (Lake), south shore, elevation 10,700 ft. (3290 m.). In the distance, the Potanin Range.

armed men increased or decreased according to the numbers of brigands suspected to be in the neighborhood. Since the brigands customarily attacked only parties that were smaller in numbers and less adequately armed than themselves, a show of strength was the best defense against them.

Following directions that he received en route from government officials, Rock eventually reached, in the spring of 1925, the lamasery town of Choni on the Kansu steppe. There he befriended the Buddhist prince who ruled over the neighboring territory according to an agreement with the Chinese government. Only through this friendship was Rock able to obtain letters guaranteeing him safe conduct and an armed escort to accompany him on his collecting tours. Much of Rock's success as a plant collector and explorer was due to his genius for gaining the confidence of local religious rulers and enlisting their support.

Actually, only a little of Rock's time was spent in the two mountain regions that he was sent to explore, the Amnye Ma-chhen and Richthofen Ranges. It had been his plan to go first west from Choni, cross the upper Yellow River, and visit the Amnye Ma-chhen. Because of difficult relations between the Buddhists and an Islamic sect nearby, this trip had to be postponed until the second year, and at the suggestion of the Choni prince Rock went instead to the Tebbu country in southwestern Kansu that spring. Rock was most vividly impressed by the wild mountainous scenery and rich flora of the Upper Tebbu country, where no white man had previously ventured. He returned several times to make further explorations and to gather seed of plants seen earlier in bloom. The aboriginal Tebbu people were nominally under the rule of the Choni prince, but in reality they led their own independent existence, especially in the Upper Tebbu country.

In the autumn of 1925 Rock proceeded across the Yellow River and up through a series of tortuous gorges to the Kokonor, a salt lake surrounded by a desolate, arid plateau twelve thousand feet above sea level. From there he went north through passes to the Richthofen Range, of which he found the northern slopes to be as bare of forests as the Kokonor region. He found, however, large forests on the southern slopes and on the T'o-lai Range to the south, composed exclusively of Picea asperata. After spending the winter at Choni, he set out in the following spring for the Amnye Ma-chhen Range, and on the way he found forest trees in the gorges beyond the upper Yellow River. He little realized that the few collections of conifer seed that he made would provide invaluable hardy material for reforestation in regions with a severe climate. It must have tested Rock's loyalty to his mission to find so little vegetation in the areas he was sent to explore. Nevertheless, he took pains to procure seed from any woody plant that he happened across, and in

Fig. 28. Niu-hsin Shan or Bullock-heart Mountain, a prominent peak in the T'o-lai Range, from which it extends northward, appearing like an isolated mountain mass. Conifers are Picea asperata Mast. Poplars (Populus suaveolens Fisch.) and willows along stream. Photographed at 9500 ft. (2920 m.).

this way he accomplished much more than if he had abandoned his efforts and pursued instead a search for spectacular new plants.

Rock had intended to return to North America late in 1926, but political conditions in China made it difficult, if not impossible, for him to travel across that country at that time. The nationalistic Kuomintang had been revived in southern China earlier in the year, and by midsummer had begun its triumphant march northward to Peking. China became less and less safe for foreigners, and finally Rock had to flee the country in the spring of 1927. Fortunately, his belongings and collections were forwarded to the American Express Company in Shanghai, and nothing was lost. A year after Rock's departure from Choni the city was sacked by Islamic intruders and the prince fled for his life to the Tebbu country, only to be murdered by his own people in the end.

When I visited Dr. Rock in his office at the Far Eastern Institute of the University of Washington at Seattle, in 1954, he was surprised to learn that many of the woody plants that he had introduced could still be found in cultivation on the Canadian prairies. Dr. Donald Wyman recently advised me that there are at the Arnold Arboretum as well substantial living collections from the seed Rock collected.

There is abundant evidence that the hardiness ratings given by Rehder in his manual are not always applicable to plants from Rock's seed. Many of these species also occur in West China, whence E. H. Wilson had introduced them fifteen to twenty years earlier, and Rehder assigned these species to Zone V. Since Rock's plants have almost all survived the winters of the Canadian prairies without injury, they should be assigned to Zone II or III.

Some of the outstanding introductions from the expedition can be mentioned here. Picea asperata Masters, the Asiatic counterpart of Norway spruce (P. Abies [Linnæus] Karsten), is the most vigorous-growing of the Chinese spruces and as a forest tree for cold dry regions it has great promise. The purple spruce (P. purpurea Masters) is a handsome ornamental tree with light violet-blue foliage of irregular texture. Such is the attractiveness of the foliage of this species that if nurserymen selected slow-growing forms these might well prove superior to slow-growing forms of P. pungens and P. Abies.

Caragana brevifolia Komarov, as grown in the hedge plot at the Experimental Station at Morden, impressed me as the best low to medium height deciduous hedge I had seen. It has tiny dark green leaves that appear very densely when the plant is trimmed. This species is worthy of trial in other areas.

A taller shrub of most bizarre aspect is Caragana jubata (Pallas) Poiret, a species with the sparingly branched stems covered with a shaggy tomentum that gives the plant the appearance of a cactus.

Fig. 29. View from summit of Kuang-k'e pass, looking southwest toward the limestone wall which forms part of the Rock gate into The-wu land; elevation 12,550 ft. (3860 m.). Plants in foreground, lower left, are Potentilla fruticosa L. var. parvifolia Wolf.

Flowers of the evergreen Daphne tangutica Maximowicz have a white corolla with a violet tinge inside and violet outside. Though not hardy on the prairies except where protected by a snow cover, this compact little shrub finds a place along with the other evergreen daphnes in the garden.

Five species of Rhododendron that would be of interest to anyone attempting to develop really hardy hybrids are those collected by Rock in northwest China. Of these, the only large-leaved species are R. Przewalskii Maximowicz, a shrub of medium height, and R. rufum Batalin, a tree that attains a height of 8 m. Both plants grow on high alpine meadows in the mountains of Kansu. The other three species, R. anthopogonoides Maximowicz, R. thymifolium Maximowicz, and R. capitulatum Maximowicz, might possibly be used in crosses to produce low-growing, smaller-leaved hybrids. I did not see any of these species in cultivation on the Canadian prairies, but they are probably all to be found in large collections of Rhododendron specialists.

There are many other species of trees and shrubs introduced or reintroduced as a result of this remarkable expedition that will no doubt find use either because of their own merits or as breeding material with genes for hardiness. Since the region penetrated by Rock on this expedition is no longer accessible to the outside world, it is important to the work of developing hardy trees and shrubs for North America that none of these species still surviving in cultivation should be allowed to disappear from collections. Even if northwest China again becomes accessible at some future date, it is not likely that an expedition of scope comparable to that of the 1924-27 expedition will take place for some time to come.

Bibliography

Bretschneider, E. Russian botanical explorers in China proper, Mongolia, Chinese Turkestan and Tibet, since 1870. History of European botanical discoveries in China 2: 959-1048 (1898).

Cox, E. H. M. The plant introductions of Reginald Farrer, pp. 25-28. New Flora and Silva, Ltd., London (1930).

Rehder, A. Manual of cultivated trees and shrubs. Ed. 2. 996 pp. The Macmillan Co., New York (1940).

Rehder, A. & C. Kobuski. Enumeration of the ligneous plants collected by J. F. Rock on the Arnold Arboretum expedition to Northwest China and Northeastern Tibet. Jour. Arnold Arb. 13: 385-409 (1932).

Rehder, A. & C. Kobuski. An enumeration of the herbaceous plants collected by J. F. Rock for the Arnold Arboretum. Jour. Arnold Arb. 14: 1-52 (1933). (Includes [pp. 43-52] "List of seeds of ligneous and herbaceous plants collected in 1925 and 1926 by J. F. Rock and distributed by the Arnold Arboretum.")

Rehder, A. & E. H. Wilson. Enumeration of the ligneous plants collected by J. F. Rock on the Arnold Arboretum expedition to Northwest China and Northeastern Tibet. Jour. Arnold Arb. 9: 4-27, 37-125 (1928).

Rock, J. F. Experiences of a lone geographer. Nat. Geogr. Mag. 48: 331-347 (1925).

Rock, J. F. Life among the lamas of Choni. Nat. Geogr. Mag. 54: 561-619 (1928).

Rock, J. F. Seeking the mountains of mystery - an expedition on the China-Tibet frontier to the unexplored Amnyi Machen Range, one of whose peaks rivals Everest. Nat. Geogr. Mag. 57: 131-185 (1930).

Rock, J. F. The land of the Tebbus. Geogr. Jour. 81: 108-127 (1933).

Rock, J. F. A monographic study of the Amnye Ma-chen Range and adjacent regions. Instituto Italiano per il Medio ed Extremo Oriente, Rome (In press).

Sargent, C. S. The Arnold Arboretum expedition to North Central Asia. Jour. Arnold Arb. 6: 213-216; 7: 68-70, 245-246 (1925).

Walker, E. H. Plants collected by R. C. Ching in southern Mongolia and Kansu Province, China. Contrib. U. S. Nat. Herbar. 28 (4): 565-568 (1941). (Survey of botanical exploration in Kansu.)

Wilson, E. H. The Arnold Arboretum expedition to North Central Asia. Jour. Arnold Arb. 8: 200-202 (1927).

It is somewhat of an event when a catalogue or seed list comes in to the Hortorium collection from a firm not represented before; it is more of an event when that item is rich in novelties not previously known to have been available in this country. Such a list is that of Armchair Explorers, 214 North Yale St., Fullerton, Calif.

Armchair Explorers is the name of a growing seed-exchange enterprise operated by Florence Carrell, known to some through her column "Armchair Exploring" in the "Gloxinian Magazine." The 12-page seed list includes, as its editor states, many rare and unusual kinds - mostly of subtropical or tropical plants. They have been gathered by collectors, mostly from native sources, in Central America and the Caribbean, Chile, Australia, New Zealand, Hawaii, and the Philippines, to mention a few places. They are of trees, shrubs, vines, pot subjects, plus a good selection of fern spores. Prices are reasonable. The fact that this seed-exchange has been a hobby for the last eight years indicates satisfaction by those participating.

Technical Names for the Cultivated Capsicum Peppers

Lloyd H. Shinners
Southern Methodist University

The plants named by Linnæus Capsicum annuum ("Species Plantarum" 1:188-189 [1753]), C. frutescens (ibid., 189), and C. baccatum ("Mantissa" 47 [1767]) were all treated by L. H. Bailey in 1923 as C. frutescens, with 5 named varieties ("Gentes Herbarum" 1:129). But Otto Kuntze in 1891 had made the same merger, choosing for the group the name C. annuum ("Revisio Generum Plantarum". 2: 449). Under the rules of nomenclature, the first author to combine simultaneously published taxa must be followed, making it necessary to replace the currently used C. frutescens with C. annuum. As Bailey independently did later, Kuntze recognized 5 varieties, but unfortunately all have names that are illegitimate under present rules. Irish's monograph of the genus ("Annual Report, Missouri Botanical Garden" 9:53-110 [1898]), in which two species are recognized, lists one or more earlier synonyms for each of Kuntze's varieties. Correct names have still to be provided if the broad interpretation of Bailey is followed. This can be done only partly and imperfectly because no critical study of the wild races and no modern cytogenetic investigation of most of the cultivated ones have yet been made. Most of the varieties named by Kuntze and Bailey are undoubtedly to be treated as convarieties, under the definition given in the most recent published edition of the International Code ("Regnum Vegetabile" 3:61 [1952]): that is, they apply to groups of allied cultivated strains. Under the terms of the Code, names originally published as formal Latin designations may be kept for horticultural types, but are no longer treated as technical epithets. The Code is unfortunately not complete in instructions regarding convarieties, of which an example is given with italicized epithet, just as in formal names of wild plants. By extension (not by explicit permission or instruction), the practice indicated for cultivars (cf. Art. C. 19) and lines (cf. Art. 30a) may be adopted for convarieties, permitting us to retain certain of Bailey's varieties (cf. Bailey, "Manual of Cultivated Plants" ed. 2: 873 [1949]), as follows:

Capsicum annuum convar. cerasiforme, the Cherry Pepper strains
convar. conoides, the Cone Pepper strains
convar. fasciculatum, the Red Cluster Pepper strains
convar. longum, the Long or Cayenne Pepper strains
convar. grossum, the Bell or Sweet Pepper strains

Note that, although an italicized Latin epithet is used (following the example given in the Code, Art. 30e), there is no designation of basionym and no statement of "comb. nov." nor of author. More importantly, no reference is made to the older varieties published by Kuntze, nor are those cited in synonymy by Irish taken into account. The permission granted by Article C. 7 of the Code to disregard priority because of linguistic and "other" difficulties is perhaps being interpreted too broadly. Some basic difficulties have been brushed aside. First of all, we have no critical taxonomic account of the wild capsicums. Secondly, we have only some fragmentary and sometimes contradictory cytogenetic studies of the cultivated races. There is no more modern or comprehensive general discussion than that of Irish, nearly 60 years old. Thirdly, if ample knowledge were available, we should still have the problem of judging which of the three published nomenclatural reviews was the most sound, or else of concocting a new slate of names based on the three together plus needed additions. We might very quickly find ourselves spending a deal of time and effort on work that is neither necessary nor of any real benefit. Perhaps it would be of some advantage to limit priority of horticultural names to some recent date - say that of the second edition of Bailey's "Manual of Cultivated Plants," or that of the Royal Horticultural Society's "Dictionary of Gardening." This would help especially in the case of convariety names; it would be of little use with regard to most cultivars, since neither publication lists these in detail. Perhaps the only real conclusion to be drawn from the examples which started this discussion is: recommendations to be followed in dealing with horticultural nomenclature may be desirable and helpful, but we had better be very cautious about trying to lay down binding rules.

Apart from the cultivated types, there is at least one wild variety deserving a name. This is the so-called "bird cherry," native in the Caribbean region north to Florida and southern Texas, west through Mexico, and an early introduction into warm countries around the world. It is a shrubby perennial, recognized from Linnæus on as different from C. annuum, and requiring a new combination when treated as a variety of that species. It becomes:

Capsicum annuum var. minus (Fingerhuth) Shinners, comb. nov.

- C. frutescens var. minus Fingerhuth, Mon. Gen. Capsici: 17 (1832). (Also published as new by Dunal in De Candolle, Prodr. 13 pt. 1: 413 [1852]).
- C. frutescens Linnæus, Sp. Pl. 1: 189 (1753).
- C. annuum var. frutescens (Linnæus) O. Kuntze, Rev. Gen. 2: 449 (1891).

Small ("Flora of the Southeastern United States "ed. 1: 992 [1903]) treats C. baccatum and C. frutescens as distinct species, the former (from Florida and Texas and southward) more pubescent and with more distinct calyx-teeth, the latter (from Florida southward) more glabrous and with obsolete calyx-teeth. Willdenow ("Species Plantarum" ed.4, 1 pt. 2: 1051 [1798]) said that C. baccatum differed little from C. frutescens, having a more slender, more shrubby stem, not scabrellous, and the calyx-teeth slender and spreading, not obsolete. The plant of southern Texas (where according to Small only C. baccatum occurs) has very short, abrupt calyx-teeth, and is glabrous or very sparsely pubescent. For the present the two are not considered to be distinct.

In a recent paper dealing primarily with the cytogenetics of a small number of cultivated strains, Smith and Heiser ("American Journal of Botany" 38: 362-368 [1951]) recognized C. annuum and C. frutescens as distinct species, separated by their inter-sterility, associated with slight and greatly overlapping morphological differences. Since their sample was extremely limited even for cultivated forms, and since wild ones were not even considered, their taxonomic conclusions are hardly to be taken seriously. Even if sterility were consistent among wild populations, it would be grounds for recognizing subspecies at best, since morphological differences are so slight. If the populations of Capsicum annuum are grouped under two subspecies, there may arise a nomenclatural problem identical with that recently discussed for Medicago polymorpha ("Rhodora" 58:9-10 [1956]). If C. frutescens is placed in new combination as a subspecies under C. annuum, and if more varieties than one are named under it, a var. frutescens without author is automatically created. This would require rejection of the new combination made above, yet at the same time the automatic new varietal name would be illegitimate because a later homonym of var. frutescens (Linnæus) O. Kuntze! These items are mentioned merely to call attention to some peculiar complications created by the new rules. As with Medicago, no attempt is made here to solve the problems.

The epithet minus refers to the fruits rather than to the stature of the entire plant. This accords with the illustrations of fruits given by Smith and Heiser, as well as with the common name. The epithet would be rather inappropriate for the plant as a whole.

Fig. 30. Amaryllis Evansiæ. Group of collected bulbs flowering in greenhouse at Lafayette, La., in March 1956.

Amaryllis Evansiæ sp. nov.

Hamilton P. Traub[1]
and
Ira S. Nelson[2]

In 1954, the junior author conducted a plant collecting expedition to South America under the sponsorship of the Louisiana Society for Horticultural Research. The plants collected include various species of Amaryllis L. This report is concerned with one of these Amaryllis species.

In the province of Santa Cruz, near the city of Santa Cruz, Bolivia, the junior author discovered several colonies (populations) of an Amaryllis species which superficially resembled Amaryllis Belladonna L. in some particulars. These colonies of the unidentified species varied in size from an estimated 15,000 plants, in the location 30 kilometers west of Santa Cruz along the Santa Cruz-Cochabamba highway, to colonies with estimated intermediate lower populations, down to one with as few as ten plants, in a colony 15 kilometers west of Santa Cruz on the same highway. Collections were made in nine different locations, in eight of which the plants represented pure stands, but in one the plants were mixed, including both Amaryllis Belladonna (Santa Cruz form) and the unidentified species. The mixed colony is located on the Hacienda Souce, about 35 kilometers east-northeast of the city of Santa Cruz. At this location natural hybridization may be taking place.

Although a few colonies were found in cultivated fields or pasture land which had recently been cleared of jungle growth, most of the populations were growing in deciduous jungle beneath an undergrowth of shrubby plants. The soil was either very sandy or almost pure leaf mold, or else a mixture of sand and leaf mold. Both surface drainage and internal drainage of the soil were good.

The altitude at which this Amaryllis species was found varied from 445 - 620 meters above sea level where the temperature varies from 5° to 43° C. (40° to 100° F.), depending on the season. The precipitation of the area is seasonal with somewhat distinct dry and rainy seasons. This species was in flower between September 5, 1954 and the last of October of the same year.

The species has been intensively studied by the collaborators on this paper and the final outcome was the realization that it was a species new to science. It belongs to the subgenus Aschamia in

[1] Editor and Research Director, American Plant Life Society.

[2] Professor of Horticulture, Southwestern Louisiana Institute.

which the paraperigone[1] is absent or present (if present, not closing in the throat of the tepaltube[2]), and the stigma is triangularly 3-lobed (capitate). In the new species the paraperigone is absent, and it differs from all other known species in the group in having both the stamens and the style much shorter than the limb (tepalsegs[3]). It is nearest to Amaryllis Belladonna L., from which it differs further in the shorter tepaltube, the horizontal carriage of the perigone[4], the flower color, and other characters. It is unique in having two characters that are unstable: the leaf shape varies from long-elliptic to broad-elliptic; the stigma is usually triangularly 3-lobed (capitate), but sometimes is shortly trifid. This indicates that the species is relatively young from an evolutionary viewpoint. Apparently not sufficient time has elapsed since it arose to bring about stability in all of the prominent characters. In one population noted, the new species and Amaryllis Belladonna L. (Santa Cruz form) are growing side by side. Since Amaryllis species are often interfertile, hybridization may be going on.

The new species has been named for Mrs. U. B. Evans and her daughter, (Mrs.) Mariana Evans Applegate, of Ferriday, Louisiana, for their part in sponsoring the expedition that led to its discovery.

Amaryllis Evansiæ Traub et Nelson, species nova.

A omnibus aliis speciebus subgeneris Aschamiæ staminibus styloque quam tepalsegmentis valde brevioribus differt. Amaryllidi Belladonnæ proxime affinis sed ab ea tepaltubo breviori, perigonio horizontali, et colore florum præcipue differt.

Description: Bulb 4.2-6 cm. long, 4.2-5.2 cm. wide, rhizomatous. Leaves 3-7, strap-shaped to broadly oblanceolate, to 38.5 cm. long, to 4.9 cm. broad. Peduncle usually nearly terete, rarely somewhat compressed with rounded edges, 15-22.5 cm. tall. Spathe 2-valved, valves lanceolate, 6.1-7 cm. long. Umbel 2-3-flowered. Pedicels 3.6-6.8 cm. long. Flowers held horizontally, greenish in the throat, the tepalsegs hardly at all or distinctly wavy on the margins; flower color on opening very light chartreuse green (663/2 to 663/3, Wilson, RHS Color Chart) in center of tepalsegs, lighter toward the margins, changing on aging to lighter chartreuse green; or very light yellow (Naples yellow, 403 to 403/1), straw

[1] [Ed. note: some of the technical terms used in describing the flowers of the amaryllids are of Dr. Traub's own coining (cf. Traub, "Terminology for the floral envelope of Amaryllidaceæ," Herbertia 13: 98-100 [1946]) and since many readers may be unfamiliar with them, they are defined in footnotes. Paraperigone: ring of separate or united appendages in throat of perianth, including what is usually termed a "crown" or "corona."]

[2] [Tepaltube: tube formed by fusion of lower portions of the tepals.]

[3] [Tepalsegs: free portions of tepals, when a tepaltube is present.]

[4] [Perigone (a standard but little-used term): perianth, when outer and inner segments are very similar.]

Fig. 31. Amaryllis Evansiæ.

yellow (604/2 to 604/3) in the center and lighter colored toward the margins, or sometimes evenly colored Naples yellow (403/2), and rarely almost imperceptibly penciled with pinkish which disappears on aging. Tepaltube 1.4-1.7 cm. long, 4 mm. in diam. at base, 8 mm. in diam. at apex. Paraperigone (corona) absent. Tepalsegs: the 3 setsegs[1] of one of two shapes - either broadly-elliptic, the ratio of length/width ranging from 1.9 to 2.1, or narrowly-elliptic, the ratio of length/width ranging from 2.6 to 2.9, the uppermost setseg ranging from 7.2-9.3 cm. long, 2.3-3.7 cm. wide, the 2 lower setsegs 7.2-9.2 cm. long, 2.3-3.2 cm. wide; the petsegs[2] in all cases narrowly-elliptic, the length/width ratio ranging from 2.7 to 5.5, the 2 upper petsegs ranging from 7-9.2 cm. long, 1.7-2.8 cm. wide, the lowermost petsegs 7.5-9.4 cm. long, 1.3-1.8 cm. wide. Stamens shorter than the style. Ovary 3-sided, angles rounded, 7-10 mm. long, 5-6 mm. in diam.; style reaching to about half the length of the tepalsegs; stigma usually triangularly lobed (capitate), rarely distinctly shortly trifid with rounded divisions. Capsule 3 x 1.8 cm., with rounded lobes. Seeds numerous, discoid, black.

Holotype: Nelson and Traub [Traub Herbarium no. 414], grown in greenhouse at Southwestern Louisiana Institute, Lafayette, La. (from bulb collected by Ira S. Nelson, 9-18-54, 15 kilometers out of Santa Cruz, Bolivia), 1-24-56. (Traub Herbarium). Paratypes: Nelson [Traub Herb. no. 402], grown in greenhouse at S. W. La. Inst., Lafayette, La. (from bulb collected by Ira S. Nelson, 9-18-54, 30 kilometers out of Santa Cruz, Bolivia), 12-23-55 (Traub Herb.); Nelson & Traub [Traub Herb. nos. 415, 416, 417], grown in greenhouse at S. W. La. Inst., Lafayette, La. (from bulbs collected by Ira S. Nelson, 9-18-54, 30 kilometers out of Santa Cruz, Bolivia), 1-24-56 (415 at Bailey Hortorium; 416 and 417 in Traub Herbarium).

Range: Bolivia, between Santa Cruz and Cochabamba.

Notes: Amaryllis Evansiæ belongs in the subgenus Aschamia, but differs from all other known species in this group in having both stamens and style much shorter than the limb (tepalsegs). It is nearest to Amaryllis Belladonna L., from which it differs further particularly in the shorter tepaltube, the horizontal carriage of the perigone, and the flower color. The tepalsegs vary from broadly-elliptic to long-elliptic in shape. The flower color varies widely, from very light chartreuse green to light cream and very light yellow with sometimes pencilings of very light pinkish. The color intensity and value also change with aging.

Amaryllis Evansiæ is of relatively easy culture, and thus is a valuable addition to the Amaryllis breeding stock. It should be used as the basis of yellow-flowered hybrids, in conjunction with Amaryllis Aglaiæ Castellanos.

[1] [Setsegs (or setepalsegs): outer segments of perianth, when a tepaltube is present.]

[2] [Petsegs (petepalsegs): inner segments of perianth, when a tepaltube is present.]

Kalmia, the American Laurels

Mary L. Holmes

Kalmia latifolia, the American or mountain laurel, is one of the most beautiful flowering shrubs native to North America, prized as an ornamental for its pink but scentless flowers borne in clusters on shrubs as much as 6 or 7 m. high. It is a member of the family Ericaceæ, which includes also the rhododendron and azalea. Indigenous to the Appalachian Mountain area and the eastern coast of North America, from Florida to New England, it is well known in American and European gardens.

Kalmia latifolia was known and used by the American Indians, who passed the "spoon-wood" on to the earlier settlers along the coast. The first historical record of K. latifolia appears in Henry Hudson's log of his trip to Cape Cod in 1609, where he reported "Rose-trees" growing. In 1649 the laurel was listed as one of the "productions" of the New World, found in New Holland (New York City).

John Banister collected it in Virginia in the 1670's and sent a specimen to John Ray in England ten years later. This specimen is now in the British Museum of Natural History. Plukenet based the first illustration of Kalmia latifolia, which appeared in 1691, on this same specimen. He called it Cistus sempervirens, and listed it under that name in his "Almagestum Botanicum," published in 1696.

Marc Catesby applied to it still another generic name, Chamædaphne, when he published the first color plate of K. latifolia in vol. 2 (pl. 98) of his "Natural History of Carolina" in 1743. In the same year Johannes Gronovius published Clayton's "Flora Virginica," in which Clayton described the plant as an Azalea.

Linnæus' use of Kalmia latifolia, in his "Species Plantarum," 1753, makes this name official for the mountain laurel. However, the name Kalmia latifolia appears to have originated in a doctorate thesis dated October, 1751, when the genus Kalmia was named and distinguished from other related groups by a Swedish student of Linnæus', Leonhard Chenon. In his preface he stated that Kalmia (as well as seven other new genera) was based on collections recently received from Dr. Kalm, who had seen and collected it in Maryland, Pennsylvania and New York. The species K. angustifolia also was named and described in this same paper.

The story of Dr. Pehr Kalm's trip to America is an interesting one. Although he had originally been enrolled at the University of Abo to study theology, his interest in natural sciences led one of his professors to encourage him to travel through Finland and Sweden instead. In Sweden he met Linnæus, and with his encouragement entered the University of Uppsala. After an outstanding career as a student, culminating in a professorship of economics at the University of Abo in 1747, he and Linnæus obtained funds to send Kalm to America. From 1748 to 1751 Pehr Kalm traveled the eastern coast of North America collecting strange new plants and learning their uses. While he was in the New World, Kalm's vocation to the ministry, which had originally brought him to the University of Abo, was still evident. When Johan Sandin, the pastor of the Swedish church in Racoon, New Jersey, died, Kalm conducted some of the church services. He married the pastor's widow, Anna Margareta (nee Sjoman), the year before their return to Europe. In 1757 he was ordained a Lutheran minister.

On his return to Europe, Kalm turned his collections over to Linnæus for naming and classifying. It was on material in these collections that Linnæus' student, Chenon, based the new genus Kalmia, in honor of its collector. Linnæus later included Kalmia in his "Species Plantarum" of 1753, and his use of the name there makes it official for the mountain laurel.

From Pehr Kalm's entries in his journal, which he started publishing in 1753, we know of many early uses of the mountain laurel, most of which the settlers learned from the Indians. When Kalm was in America, the laurel was already being grown in colonial gardens as an ornamental. The evergreen branches of this shrub were used as church decorations at Christmas and New Year's Day. Its usefulness was the primary reason for its importance, however. The strong wood was carved into weaver's shuttles, pulleys, and spoons and trowels. The early common name spoonwood indicates this usefulness for tools. The leaves also were valued for their supposed medicinal powers, especially when prepared as a wash for skin diseases.

But Kalmia has been notorious, too. The common names lambkill and sheep-laurel for the species K. angustifolia allude to its poisonous effects when eaten by sheep. Kalm and others reported that the leaves affected oxen, cows, and horses in the same way, although wild game seemed immune to their poison.

The blossom color gave rise to another name for K. latifolia. It was called calico-bush, from the various shades of pink in its corolla. Kalm noted in his journal that the beautiful flowers had no fragrance, but took a philosophic view of this particular shortcoming and wrote, "So equally and justly does nature distribute her gifts; no part of the creation has them all, each has its own, and none is absolutely without a share of them."

Fig. 32. Kalmia latifolia: a, habit; b, flowering branch x 2/5; c, d, flower x 4/5; e, flower in vertical section x 1 3/5; f, ovary x 8; g, ovary in vert. sect. x 8; h, ovary in horizontal sect. x 9 1/2; i, stigma x 9 1/2; j, anther x 9 1/2; k, capsule x 5; l, seed x 24.

Europeans grew the mountain laurel as early as 1734, when living plants were sent by John Bartram, an American naturalist, to Peter Collinson of London, who first flowered them in 1740. Aiton grew and flowered the laurel at Kew prior to 1779.

Today the mountain laurel is important primarily as an ornamental, although rural Pennsylvania still uses its wood for tool handles. Kalmia latifolia is the most commonly grown species of the genus, both in gardens, and along roadsides where it is planted through highway beautification programs. It is best-suited to acid soils. Since this species does poorly in Britain and southern Europe, many Continental gardens have turned to K. angustifolia, K. polifolia and K. hirsuta, which seem better adapted.

Botanical Classification

The genus Kalmia is readily distinguished from other members of the Ericaceæ by the corolla-tube's being provided with 10 small pouches in which the anthers lie before reaching the dehiscent stage. When approaching maturity, the curved filaments spring upwards rather suddenly, lifting the anthers from their pouches. Eight species are known, all in North America.

Several species of Kalmia are cultivated, and of them K. latifolia is the largest, most showy, and most variable. A key to the species follows.

1. Flowers in terminal clusters.
   2. Leaves alternate, 5-10 cm. long (2-5 cm. long in cv. 'Myrtifolia'); flowers 2.0-2.5 cm. across, in compound inflorescences. . . . K. latifolia
   2. Leaves opposite or ternate, 0.5-3.0 cm. long; flowers 0.8-1.5 cm. across, in simple umbel-like inflorescences.
      3. Leaves more than twice as long as they are wide. . . . . K. polifolia
      3. Leaves less than twice as long as wide; corolla 0.8-1.2 cm. across. . . . . K. microphylla
1. Flowers in lateral clusters (or borne singly) on the stems, usually amongst the leaves.
   4. Corolla-lobes acute; calyx deciduous and falling with the corolla; twigs and flower-pedicels hirsute. . . . . K. hirsuta
   4. Corolla-lobes rounded (may be apiculate by extension of mid-vein); calyx persisting to fruiting time.
      5. Calyx glabrous (without hairs or raised glands); leaves spatulate; flowers about 1.5 cm. across. . . . . K. cuneata
      5. Calyx pubescent; flowers 0.5-1.0 cm. across.
         6. Leaves glaucous-blue above, glossy; calyx and pedicels not glandular. . . . . K. carolina
         6. Leaves dull green; calyx and pedicels slightly glandular. . . . . K. angustifolia

Kalmia latifolia Linnæus. Mountain laurel. Most of the so-called varieties of mountain-laurel are cultivars. The botanical variety lævipes Fernald, however, is native to the coastal plain of southeastern United States and has smooth, glabrous flower-pedicels. Cultivars are listed below.

'Alba' has white flowers. Cultivated since 1840.

'Fuscata' bears flowers with a broad dark purplish-brown band within. Not offered since 1932.

'Myrtifolia' is a dense dwarf shrub with darker green leaves 2-5 cm. long. (Synonyms are 'Minor' and 'Nana'.) Cultivated since 1840; not known to be currently available in this country, but offered by European firms.

'Ovata' has been offered recently by British sources, but characteristics of the plant are not known.

'Polypetala' has the corolla deeply divided into 5 narrow strap-shaped lobes. Although known in gardens of Europe and America since about 1885, it is rarely encountered and is not known to be currently available in the trade.

'Rosea' has uniformly rose-red flowers. Currently listed by one British source.

'Rubra' has deep purplish-pink flowers. Commercially available from European sources only.

'Splendens' is currently listed by the Arboretum de Kalmthout, Kalmthout, Belgium, but its distinguishing characters are not known.

Kalmia angustifolia Linnæus. Lambkill or Sheep-laurel. This is found wild from Eastern Canada south to the mountains of Georgia. Cultivars are listed here.

'Candida' (also known as 'Nitida') has white flowers.

'Nana' is a dwarf form, growing to 3-4 dm. tall.

'Ovata' has the leaves ovate to elliptic, rather than oblong-lanceolate. Offered in 1953 by Carl S. English, Seattle, Washington, and by several European sources.

'Pumila' is doubtfully distinct from 'Nana', but seed under this name has recently been offered by the Royal Botanic Garden, Edinburgh.

'Rosea' has flowers rose-red. Currently available from the Netherlands and Britain.

'Rubra' has dark purple flowers and broader leaves. Probably the most common cultivar, available from three domestic and scores of foreign sources.

Kalmia carolina J. K. Small. Carolina-laurel. The last listing of this by any domestic source was in 1943, though it was offered in 1952 by W. J. Marchant of England. It is native in woods of

the inner coastal plain from South Carolina to Virginia. It was first recorded in cultivation in 1906, but may have been grown earlier under the name of the following species.

Kalmia cuneata Michaux. White-Wicky. This is currently available from 4 American and 2 British sources. No cultivars are reported although the plant has been in gardens of Europe since 1820. It grows naturally in the Carolinas.

Kalmia glauca Aiton is K. polifolia.

Kalmia hirsuta Walter (Kalmiella hirsuta [Walter] J. K. Small). Wicky. This has not been listed since 1943, although grown in European gardens since 1790. It is native in southeastern United States and suited to warm temperate gardens.

Kalmia microphylla (Hooker) Heller. (Synonyms are K. polifolia var. microphylla [Hooker] Rehder and K. glauca var. microphylla Hooker.) The distinctions between this western alpine species and the Alaskan element of K. polifolia are small but are reported not to intergrade. Botanists familiar with the plants in the wild generally accept the two species as distinct. The species is very hardy and is grown to some extent in rock gardens.

Kalmia polifolia Wangenheim. Bog-laurel. This species is native from Alaska to Labrador in Canada, and across the northern United States. It has become increasingly popular in recent years, both in America and Europe, although first introduced to cultivation about 1790.

(For var. microphylla, see K. microphylla)

'Rosmarinifolia' has rose-purple flowers, and the leaves seemingly narrower because of their strongly revolute margins. It is available from Mayfair Nurseries, Hillsdale, N. J.

Book Review

"The R. H. S. Dictionary of Gardening, Supplement" edited by Patrick M. Synge, assisted by specialists. 334 pp. Oxford University Press. Price $10.00.

The preface of Chittenden's "R. H. S. Dictionary of Gardening"[1] promised publication of a Supplement. That volume, published May 10, 1956, is now at hand and does much to compensate for inadequacies of the original work. Published under the editorship of Patrick M. Synge, it consists primarily of signed contributions of about one hundred specialists.

This Supplement serves two purposes. It provides selected lists of recommended cultivars of annual and perennial flowers (including bulbous and tuberous plants), of fruits, and of vegetables. It provides also additions and corrections to the original four-volume edition.

The lists comprise Part I of the book, occupy 134 pages, and are arranged alphabetically by genus within each of the three horticultural groups. Horticultural classifications are given in outline for some of the larger genera of flowering plants (e. g., Aster, Chrysanthemum, Dahlia, Rosa, and Tulipa) but surprisingly are omitted for others (e. g., Camellia, Narcissus, Rhododendron). In this listing one is impressed by the large number of cultivars grown in Britain but which are little known or absent in American gardens, such as a dozen fancy-named sorts of goldenrod (Solidago), as many of sneezeweed (Helenium), and about fifty of Jersey-lily (Nerine). Conversely, many genera represented in the United States by appreciable numbers of cultivars are omitted, such as the hollies (Ilex), African-violets (Saintpaulias), Rex begonias, Achimenes, flowering-quince (Chænomeles), fire-thorn (Pyracantha), yews (Taxus) and junipers (Juniperus), to mention a few. To be sure, the woody shrubs are scarcely to be classed as "flowers," but neither are they "fruits" or "vegetables." No lists of cultivar names of orchids is provided.

For most American plantsmen, the Part II of this Supplement - providing additions and corrections to the earlier four-volume work - will be the more valuable. As noted in this reviewer's earlier account of the original work, it is the first two volumes whose contents reflect the least critical work. It is here also that most of Part II applies.

The contributions represented in this Supplement reflect the most up-to-date opinions to be found anywhere. Over 180 genera have been restudied, and their accounting here includes new keys to aid in the identification of species, carefully compiled nomenclatural findings, and descriptions. In almost every instance, complete references are given to recent or basic monographic treatments.

[1] For review, see "Baileya" 1: 81-85 (1953).

It is worthy of note that treatments of 94 genera treated in detail were prepared by W. T. Stearn of the British Museum (Natural History) - more than by all other specialists combined. Among the genera having more completely revised treatments in this Supplement are:

Achillea	Digitalis	Lathyrus
Asarum	Ficus	Meconopsis
Camellia	Galanthus	Nerine
Corydalis	Hosta	Polygonum
Cyclamen	Hymenocallis	Selaginella
Datura	Impatiens	(no key included)

Excellent accounts are given also for subjects other than plant genera, and American plantsmen may find it helpful to consult those on:

Botanic Gardens and Arboreta	Identification of Plants
Bulbs	Nutrition
Correct Names	Plant Breeding
Gender of Generic Names	Pronunciation of Botanical Names

Under "Nomenclature" is reprinted the complete text of the 1952 edition of the International Code of Nomenclature for Cultivated Plants. The section "Orchid Hybridizing" provides formulæ and instructions for the symbiotic culture of orchid seedlings. That on "Rock Garden Construction" is up-to-date and was prepared by the noted alpine plant specialist, Will A. Th. Ingwersen. A very interesting section titled "Shapes of leaves" explains not only terminology, but republishes Dr. W. A. Turrill's formulæ for determining the name to be applied to each leaf shape. The nomenclature and classification of palm genera is by H. E. Moore.

Many of the revised entries call for deletion of the account in the original work and the substitution of a new one. Other entries are entirely new. As noted in the preface, "It is realized that the treatments of many other genera are equally in need of revision, and that the selection of those treated has had to be controlled to a considerable extent by the availability... of specialists... and the possibility of their being able to fit this work into their already heavy commitments..."

It is proposed to issue added Supplement volumes at about five-year intervals and thus provide a means of bringing the Dictionary more nearly up-to-date.

The Editor and contributors have done much in Part II of this Supplement to compensate for the large number of errors and inadequacies of the original work. More needs to be done and each successive Supplement promises to meet this need. The book is a "must" for every possessor of the original work. It makes future possession of that set the more desirable. As a volume by itself, it is worth the price and should become a part of the plantsman's library.

G. H. M. L.

ABBREVIATIONS USED IN BAILEYA

ann.	annual	dm.	decimeter	lf.	leaf
bien.	biennial	fl.	flower	lft.	leaflet
br.	branch	fls.	flowers	lvs.	leaves
brt.	branchlet	flt.	floret	mm.	millimeter
caps.	capsule	fr.	fruit	per.	perennial
cl.	clone	ft.	foot	segm.	segment
cm.	centimeter	hort.	horticultural	st.	stem
cv.	cultivar	in.	inch	sts.	stems
diam.	diameter	infl.	inflorescence	var.	variety

METRIC - ENGLISH EQUIVALENTS (approximate)

6 mm. - 1/4 in.	10 cm. - 4 in.	10 mm. - 1 cm.
12 mm. - 1/2 in.	1 dm. - 4 in.	10 cm. - 1 dm.
25 mm. - 1 in.	3 dm. - 1 ft.	10 dm. - 1 meter
2.5 cm. - 1 in.	10 dm. - 1 yd.	
5 cm. - 2 in.	1 m. - 39 in.	